

**ALUMINOBOROSILICATE GLASS**

**Publication number:** JP2002201040

**Publication date:** 2002-07-16

**Inventor:** TAKEI YUSUKE; KAWAGUCHI TOSHIYASU

**Applicant:** ASahi GLASS CO LTD

**Classification:**

**- international:** C03C3/091; C03C3/093; C03C3/11; C03C3/118;  
C03C3/076; (IPC1-7): C03C3/091; C03C3/093;  
C03C3/11; C03C3/118

**- european:** C03C3/11

**Application number:** JP20010096809 20010329

**Priority number(s):** JP20010096809 20010329; JP20000332198 20001031

**Report a data error here**

**Abstract of JP2002201040**

**PROBLEM TO BE SOLVED:** To obtain an aluminoborosilicate glass enabling to reduce bubble occurrence. **SOLUTION:** This aluminoborosilicate glass comprises, in mass%, 45 to 78 SiO<sub>2</sub>, 2 to 22 Al<sub>2</sub>O<sub>3</sub>, 4 to 15 B<sub>2</sub>O<sub>3</sub>, 0 to 2 Li<sub>2</sub>O, 0 to 10 Na<sub>2</sub>O, 0 to 3 K<sub>2</sub>O, 0 to 5 MgO, 0 to 8 CaO, 0 to 10 SrO, 0 to 17 BaO, 0 to 10 ZnO, 0 to 0.15 Fe<sub>2</sub>O<sub>3</sub>, 0 to 0.015 SO<sub>3</sub>, 0 to 1 Cl, and 0 to 0.5 F, where Cl+F is  $\geq 0.05$ .

Data supplied from the *esp@cenet* database - Worldwide

JP2002-201040A

## Claims:

## [Claim 1]

An alumino-borosilicate glass, which consists essentially of:  
SiO<sub>2</sub> of 45 to 78%, Al<sub>2</sub>O<sub>3</sub> of 2 to 22%, B<sub>2</sub>O<sub>3</sub> of 4 to 15%, Li<sub>2</sub>O of 0 to 2%, Na<sub>2</sub>O of 0 to 10%, K<sub>2</sub>O of 0 to 3%, MgO of 0 to 5%, CaO of 0 to 8%, SrO of 0 to 10%, BaO of 0 to 17%, ZnO of 0 to 10%, Fe<sub>2</sub>O<sub>3</sub> of 0 to 0.15%, SO<sub>3</sub> of 0 to 0.015%, Cl of 0 to 1%, and F of 0 to 0.5%, with each component expressed as % by weight, and wherein Cl+F is 0.05% or more.

## [Claim 2]

The alumino-borosilicate glass according to claim 1, wherein Al<sub>2</sub>O<sub>3</sub> is 2 to 20%, CaO is 0 to 6%, SO<sub>3</sub> is 0.001 to 0.015%, Cl is 0.05 to 0.8%, and F is 0 to 0.3%.

## [Claim 3]

The alumino-borosilicate glass according to claim 1 or 2, wherein SiO<sub>2</sub> is 61% or more, and Al<sub>2</sub>O<sub>3</sub> is 10% or less.

## [Claim 4]

The alumino-borosilicate glass according to claim 1, 2 or 3, wherein B<sub>2</sub>O<sub>3</sub> is 7% or more.

## [Claim 5]

The alumino-borosilicate glass according to claim 1, 2, 3 or 4, wherein Li<sub>2</sub>O+Na<sub>2</sub>O+K<sub>2</sub>O is 1% or more.

## [Claim 6]

The alumino-borosilicate glass according to any of claims 1 to 5, wherein the strain point is 520 to 700°C.

## [0001]

## [Field of the Invention]

The present invention relates to an alumino-borosilicate glass which is suitable for an ampoule, a substrate for a liquid crystal display, a substrate for a photomask, a substrate for a magnetic disk, or the like.

Table 1

Example	1	2	3	4	5
SiO <sub>2</sub>	73.2	59.2	56	81	72
Al <sub>2</sub> O <sub>3</sub>	4.7	17.7	11	2.4	5.1
B <sub>2</sub> O <sub>3</sub>	9.2	8	5.9	12.4	9.1
Li <sub>2</sub> O	0.10	0	0	0	0
Na <sub>2</sub> O	6.1	0.01	0.05	3.3	6
K <sub>2</sub> O	0.5	0	0	0.5	0.5
MgO	0.02	2.8	2.1	0.03	0.02
CaO	0.35	4.5	3	0.04	0.4
SrO	0	7.5	6.5	0	0
BaO	3.5	0.1	15.1	0	4
ZnO	2.7	0	0	0	2.5
Fe <sub>2</sub> O <sub>3</sub>	0.06	0.07	0.05	0.10	0.06
TiO <sub>2</sub>	0.05	0.04	0.04	0.03	0.05
ZrO <sub>2</sub>	0.05	0.04	0.10	0	0.05
SO <sub>3</sub>	0.0025	0.004	0.01	0.008	0.005
Cl	0.34	0.16	0.43	0.10	0.01
F	0.09	0.06	0.09	0.03	0
$\alpha$	51	38	49	32	52
Strain point	530	660	635	520	535
Annealing point	570	715	690	565	575
Bubble	0.1 or less	0.1 or less	0.1 or less	0.1 or less	5
Homogeneity	Good	Good	Good	Good	Bad